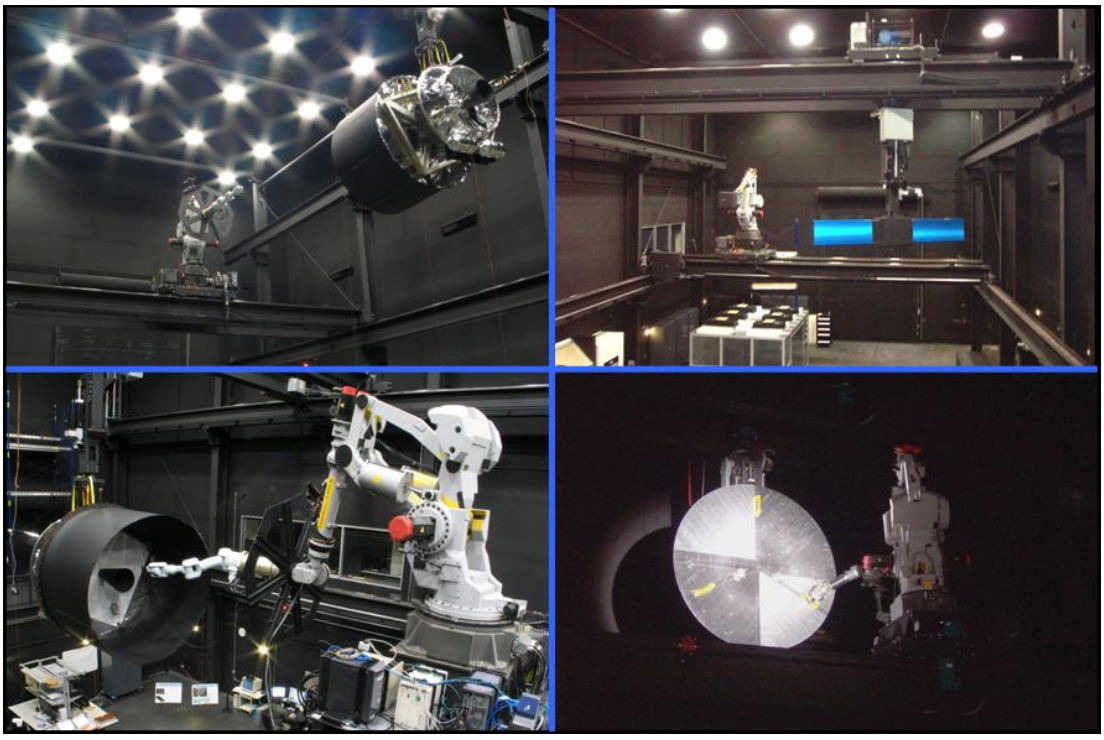
PROXIMITY OPERATIONS TESTBED



The Naval Center for Space Technology at the Naval Research Laboratory (NRL) is home to the dual-platform Proximity Operations Testbed. This unique facility provides test and evaluation of technologies associated with inter-spacecraft close proximity operations including relative navigational sensing and orbital motion, machine vision and target imaging, target pose estimation, autonomous robotics, capture mechanisms, and inter-satellite laser communication. These enabling technologies are critical for future DoD, civil, and commercial missions requiring autonomous rendezvous and capture, on-orbit servicing, remote inspection and surveillance, formation flying, and on-orbit robotic assembly. The facility's realistic on-orbit dynamics, environmental disturbances, and lighting conditions provide relevant test and verification of sensors and control logic for such missions.

Proximity Operations Testbed Specifications

Specification	Pursuer Platform	Target Platform
Degrees of Freedom	6	6
Translational Range of Travel (X, Y, Z)	25, 10, 3 m	25, 10, 3 m
Rotational Range of Travel (ψ, θ, ϕ)	180, 180, 300 deg	180, 180, 360 deg
Absolute Positional Knowledge	2 cm	2 cm
Absolute Rotational Knowledge	0.01 deg	0.01 deg
Relative Positional Knowledge	0.003 cm	0.003 cm
Relative Rotational Knowledge	0.001 deg	0.001 deg
Positional Control	0.5 cm	0.5 cm
Rotational Control	0.001 deg	0.001 deg
Maximum Tanslational Velocity	45 cm/sec	45 cm/sec
Maximum Rotational Velocity	100 deg/sec	100 deg/sec
Maximum Payload Mass	400 kg	350 kg
Maximum Payload Torque	1372 N-m	1960 N-m

Click black box to play movie about the Dynamic Motion Simulator

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